

## PATENT SPECIFICATION

DRAWINGS ATTACHED

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## COMPLETE SPECIFICATION

## Float-Controlled Switch Devices

We, VAUXHALL MOTORS LIMITED, a British Company of Luton, Bedfordshire, do hereby declare the invention for which we pray that a patent may be granted to us and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to float-controlled switch devices for liquid level indication in containers, tanks, reservoirs and the like.

It can be used for example in fuel tanks for internal combustion engines, for furnaces and for heating systems.

According to this present invention a float-controlled switch device for liquid level indication, comprises a plug adapted to be fitted into a tank, and on which plug is pivoted a float member carrying a magnet, and mounted on the plug is a magneto-responsive reed contact unit having contact arms which are open or closed according to the proximity of the magnet as determined by the position of the float member.

Preferably the float member is hollow and contains the magnet in the form of a permanent bar magnet; and the reed contact unit is similarly contained in a hollow casing, the arrangement being such that in the tank empty position the magnet lies close to the reed switch contact arms.

The scope of the invention is defined by the appended claims; the invention and how it may be performed are hereinafter particularly described with reference to the accompanying drawings, in which:—

Figure 1 is a side view, with parts broken away, of one embodiment of a switch device according to the invention;

Figure 2 is a plan view of the switch according to the invention;

Figure 3 is an end view in the direction of the arrow III in Figure 1 of the switch device according to the invention;

Figure 4 is an end view in the direction

of the arrow IV in Figure 1 of the switch device according to the invention;

Figure 5 is a side view of the switch device according to the invention, but showing an alternative form of pivot; and,

Figure 6 is a plan view of the switch device of Figure 5.

Figure 1 shows one embodiment of a float-controlled switch device according to the invention having a plug 2 with a threaded end for fixing to a hole in a tank (not shown), and a flange 4 for fitting against the wall of the tank. On the side of the flange opposite the threads is a boss 6 on which a hollow float member 8 is pivoted by a pin 10, and on which boss a hollow casing 12 is fitted.

The casing 12 contains a magneto-responsive reed contact unit 14 with its contact arms 16, 18, at right angles to the flange 4. The float member 8 is hollow, has an enlarged end, and carries a permanent bar magnet 20 between that end and the pivot.

The arrangement is such that in the "down" position (shown in full lines in Figure 1) the float member 8 lies above and parallel to the reed contact unit casing 12. In this position the bar magnet 20 closes the reed contact arms 16, 18, so as to close a circuit (not shown), the wires of which extend out from the plug by way of terminals 22, 24, to a visual or aural indicator (not shown). This indicates therefore a liquid level below the required critical value.

As the tank is filled the float member 8 is gradually raised about its pivot pin 10 to the position shown in broken lines in Figure 1; and the result is that the removal of the magnet 20 from the proximity of the magneto-responsive reed contact unit 14 changes the position of the reed contact arms, and consequently the condition of the indicator.

Figures 5 and 6 show an alternative form of pivotal mounting of the float member 8 on the boss 6. The float member 8 has a pair

of parallel arms 26 which protrude from the enlarged end of the flat, and are spaced apart so that they can fit over the boss 6 with clearance. A locating pip 28 is formed on the inner side of each arm 26 adjacent the free end thereof. The locating pips face each other, and engage in depressions in the boss 6 to secure the float member 8 to the boss 6 and yet allow pivotal movement of the flat member relative to the boss.

WHAT WE CLAIM IS:—

1. A float-controlled switch device for liquid level indication, comprising a plug adapted to be fitted into a tank, and on which plug is pivoted a float member carrying a magnet, and mounted on the plug is a magneto-responsive reed contact unit having contact arms which

are open or closed according to the proximity of the magnet as determined by the position of the float member.

2. A float-controlled switch device according to claim 1, in which the float member is hollow and contains the magnet in the form of a permanent bar magnet.

3. A float-controlled switch device according to claim 1 or claim 2, in which the magneto-responsive reed contact unit is contained in a hollow casing on the plug.

4. A float-controlled switch device substantially as hereinbefore particularly described with reference to and as shown in the accompanying drawings.

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